Barker, A. 2007. *The Science of Harmonics in Classical Greece*. Cambridge, Cambridge University Press. xii, 481 p. Pr. £60.00 (hb).

Professor Barker's *Greek Musical Writings* (Cambridge 1984-9) has become for many scholars an essential gateway to the major theoretical texts and crucial non-technical passages concerning ancient Greek music. With its detailed commentaries and cross-references (including to works not in the collection itself: Porphyry on Ptolemy, Aristoxenian handbooks, Boethius, lexicographers) *GMW* unified the corpus more tightly than ever before, and finally made it accessible to non-specialist scholars. Without it mastery of the primary sources and past scholarship would take much longer than it already does. Consequently, by virtue of which texts and issues he favored, B. has substantially determined the current exploration of Greek music by the philological mainstream. Who ever read Aristides Quintilianus before 1989? Moreover so many younger scholars have gone to study with him that a real school has grown up around him (*hoi peri Barker*).

The same determination is at work in *The Science of Harmonics in Classical Greece*, which will be comfortably familiar territory—at least initially—for those who have worked carefully through *GMW*. B.'s earlier commentaries now appear as seed to tree, something already seen in *Scientific Method in Ptolemy's Harmonics* (2000). The present study gives comparably detailed treatment to fifth- and fourth-century sources and problems (take title strictly). Favorite topics are expanded in B.'s friendly, conversational style, enlivened with enough witty reflections on Academia to leave one wanting a separate book on the topic. But this is no mere rehash of older conclusions. B. consistently pushes his boundaries, and lengthy dissections of minutiae are almost always rewarded with the revelation of some new facet to an old problem. Any scholar who wishes to cite a position from *GMW* must now check for its modification or abandonment here (no *index locorum*, but a thorough general index). Since the book assumes familiarity with the basic issues of Greek musicology, it is not an ideal introduction to the subject, though handy introductory studies are always signaled. Rather a series of focused investigations, constantly interrelated, gradually develops larger images of the period and its processes.

B. is especially concerned to blur the boundary between early rationalism and empiricism, against the facile dichotomies of later doxographers, both ancient and modern (B. confesses himself here). The book's two major sections, "Empirical Harmonics" and "Mathematical Harmonics", exemplify the same dualism. But this ergonomical decision does nothing to hinder B.'s detailed demonstration that Philolaus, Archytas, Plato, Aristotle, Aristoxenus, ps.-Euclid, and Theophrastus alike, despite startlingly different outcomes in their respective 'systems',

 DOI: 10.1163/156852510X496044

were united in a single complex musicological discourse co-evolved over two centuries by *mousikoi* and *sophistai*. In fact such labels emerge as counterproductive (cf. the early use of *sophos* for 'poet'). The surviving authors constitute a few—admittedly important—samples of this tradition. Much was now committed to papyrus, from Lasus of Hermione's treatise (?) to the spare jottings of Eratocles and the lost diagram of Stratonicus, with many points in between. All the Classical *harmonikoi*, using the term broadly, had regular recourse to what came before them, and lost positions may sometimes be teased from the extant sources by making them speak to each other. B. is a proven master of this approach in numerous books and articles, especially where musical concerns intersect with philosophical systems.

After an introductory essay on the predecessors of Aristoxenus (see below), *ho mousikos* naturally dominates the first half of the book, a series of chapters building steadily to a powerful conclusion. Here is the book's most important contribution: partial recovery of the larger philosophical and aesthetic position within which Aristoxenus framed his *Elementa Harmonica*—dominated, in its surviving form, by the unglamorous, even tedious exposition of harmonic data. B. draws on isolated statements both here and in the fragments (including clearly Aristoxenian passages of the Plutarchean *De musica* not included in Wehrli's *Die Schule des Aristoteles*) to expose what was arguably antiquity's most subtle and incisive attempt to organize purely aesthetic *phainomena* into a rigorously scientific system. This was a semi-crazed pipe-dream worthy of Philolaan numerology (see below); but Barker shows that Aristoxenus really pulled it off (one senses the residue of Aristoxenus' early Pythagorean education). B. makes strong advances by his detailed reading of Aristoxenus against Aristotle, sparring occasionally with A. Bélis (*Aristoxène de Tarante et Aristote*, 1986): his renewed defense of the *Elementa Harmonica* as being the remains of two separate treatises, not one (so Bélis), is perfectly convincing, and his explication of the relationship between the two works, within the framework of Aristoxenus' developing thought, is compelling. But Aristoxenus was anything but slavish. In particular B. shows how the organizing theory behind the narrowly technical works served a higher 'ethical' position which is largely unmentioned in the *Elementa Harmonica* (briefly Book 2), but evident in the fragments/ps.-Plutarch. This leads to our most satisfactory and integrated reading of the Aristoxenian corpus yet.

B. argues that Aristoxenus was the victim of his own cleverness: later *mousikoi* reduced and reproduced his harmonic precepts mechanically, omitting formidable theoretical discussions which they did not understand, and/or which were not of immediate interest to more simple-minded musicians, whence Bacchius, Gaudentius, Cleonides and others (I confess myself here). It is tempting to suppose, in

fact, that Aristoxenus' work was often rather beyond his own colleagues. While B.'s later arguments that Aristotle had a weak grasp of musical basics (see below) seem inconclusive, the master's treatment of musical matters was certainly cavalier, and Aristoxenus' elaborate harmonic screeds may well have gathered dust on his desk. Like Plato, Aristotle doubtless considered *harmonikê* unworthy of this much serious adult attention, and would have put a negative spin on Cicero's assessment: *quantum Aristoxeni ingenium consumptum videmus in musicis!* (*Fin*. 5.50.4). But here (again) one sees Merriam's ethnomusicological crisis: a vital sector of cultural anthropology is closed off to those who cannot see through a musicological lens (1964. *The Anthropology of Music* (Evanston)). The new vistas opened by B. might suggest that Aristotle's choice of Theophrastus as his successor, against the foiled expectations of *ho mousikos*, was due less to the latter's deficiency of wit than what the master saw as a juvenile display of consumptive genius. Incidentally B. throughout takes the quasi-factoid of Aristoxenus' bitterness and general irascibility to amusing new heights. But only a Lactantius would be soulless enough not to pity him, and deny his rightful place among the Elysian chorus of poet-scapegoats (cf. Compton, T.M. 2006. *Victim of the Muses* (Washington DC)). Seriously though, B.'s substantial recovery of Aristoxenus' solipsistic ethical-aesthetic system should be obligatory reading for historians of Greek philosophy. May this book not suffer an Aristoxenian fate.

The section on mathematical harmonics leaves a more piecemeal impression: each author is given his own chapter, usually focused on one or two problem passages. Philolaus fr. 6a is more securely integrated into its author's cosmology, and the peculiar numerology recorded by Boethius, combining the linear and exponential in a way that would have reconciled Bob Moog and Don Buchla, is attractively explained as an attempt at the mathematically impossible but metaphysically seductive—the bifurcation of the octave. His discussion of Archytas frr. 2-3 expands upon *GMW* 2.4-52, showing that in his divisions of the *genê* Archytas struck a compromise between theory and practice (please compare my 2005. *Hearing Greek Microtones*, in: *Ancient Greek Music in Performance* (Vienna)). Plato is discussed through the *Timaeus*, Aristotle through a few notoriously tricky passages which, B. argues, reveal the philosopher's shaky understanding. He defends the integrity and methodology of the *Sectio Canonis* with strong arguments, and offers a suggestive reading of the baffling material in Theophrastus fr. 716 Fortenbaugh. He closes with a brief essay on the post-Classical history of Classical harmonics, similar to views in *GMW*. Some discussions are substantially structured in response to past criticisms (e.g. Huffman on Archytas, Barbera on ps.-Euclid). Many further sources are brought into occasional view, with welcome attention to poor Porphyry and new remarks on the *Hibeh Papyrus* (I was sorry to see B. recanting his minority belief in a later dating on the basis of Aristoxenian sympathies:

these might have been brought neatly in line with his presentation of Aristoxenus' ethical position).

B.'s discussion of the two centuries of lost musicology (*sic*) *before* Aristoxenus is perhaps the least satisfying chapter, since here there has been exciting recent progress. B. considers conclusive Privitera's refutation of the ideas attributed to Lasus by Martianus Capella. There is an excellent synthesis of *katapyknôsis*, diagrams and the so-called Damonian scales (which label he refutes with promise of future discussion). B. is cautious about what I take to be S. Hagel's successful demonstration that the Greater Perfect System must have existed already in Plato's time to account completely for the musical numbers in the *Timaeus* (2005. *Twenty-four in auloi*, in: *Ancient Greek Music in Performance* (Vienna)); this might also have enriched B.'s discussion of Philolaus' numerology. Another important breakthrough by Hagel also concerns the *aulos*, that driving force of New Musical change in the Classical period: one of the early *tonoi* systems criticized by Aristoxenus may be largely reconstructed by spacing the 'Damonian' scales at the intervals given *exempli gratia* in the *Elementa Harmonica* (2000. *Modulation in altgriechischer Musik* (Frankfurt am Main)). Inclusion of this would have given very strong support to B.'s argument that Aristides Quintilianus found his 'Damonian' scales and *katapyknôsis* material in a lost work of Aristoxenus. More importantly, this discovery is one of our most vivid views of the fifth-century *harmonikoi* at work.

Nor does B. address the now documented existence of diatonic tunings in the Ancient Near East, though these strongly compromise the dominant paradigm of Greek tonal history, as established by Winnington-Ingram in *Mode in Ancient Greek Music* (Cambridge 1936). In particular it puts Aristoxenus in a completely new light. The chronology of diatonic music as more ancient than the other *genê*, which Aristoxenus did not *invent* but took from *hoi mousikoi*, is now surely vindicated. This in turn calls into question the notorious remarks about his predecessors' only treating enharmonic systems—which left Proclus scratching his head—and has a domino effect on other much-debated issues. In particular the rule of *synecheia*—his *archê* which required all proper scales (*melê hêrmosmena*) to obey minimal diatonic conditions—emerges not as a triumphant breakthrough by Aristoxenus, but an ancient foundation drawn from the lyre tradition—perfectly in accord with his reactionary musical position (recall Aristoxenus' 'fieldwork' in Arcadia: cf. Visconti, A. 1999. *Aristosseno di Taranto: biografia e formazione spirituale* (Naples)). For further discussion, please see my 2003 article *Diatonic Music in Greece*, Mnemosyne 56 (and more succinctly and lucidly, *Hearing Greek Microtones*, 15-22).

So this is a fine, important book from one of the pillars of Greek musical scholarship, and should be carefully digested to the last footnote by every serious

student of the subject. The MS is flawless, though two trivial lapses may cause confusion. In the translation of Philolaus fr. 6A (p. 264), the interval between *neata* and *trita* is given as *di'oxeian*, instead of *syllaba*. On p. 406 the interval between *nêtê* and *diatonos hyperbolaiôn* is given as a tone, instead of a tone-and-a-half.

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